

TEMPERATURES OF THREE BREEDS OF YEARLING STEERS IN SOUTH FLORIDA

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THE normal body temperature of beef cattle is considered to range between 98.0° and 102.4° F. Although Morrison (1957), Findlay (1950) and others agree that the normal rectal temperature of beef cattle should be about 101.0-101.5° F, a study by Haines (1961) showed that 104.0° F. was the average temperature for a group of Hereford yearlings in South Florida. Reports by Brody (1956), Bonsma (1948), Garrett et al. (1960), Findlay (1950), Rhoad (1938), and Rieck and Lee (1948) all point out that body temperatures of cattle are affected to some extent by air temperature and other climatic factors. These same reports also indicate that all breeds of cattle do not respond in the same manner to changes in atmospheric conditions.

Most of the studies reported on heat tolerance of cattle have pertained to mature dairy cattle and only a few to beef cattle breeds. More recent studies have involved the use of controlled temperature and humidity chambers for determining the effects of these items on physiology and production items. Although these artificial conditions are useful for stabilizing environmental conditions for such studies, information obtained under normal environmental conditions is also of importance.

It has been suspected that high humidity, intense radiation, and environmental temperatures in South Florida effect the body temperatures of cattle in this area. Therefore, the investigation reported herein involved recording the rectal temperatures of steers grazing on pasture in South Florida to verify this theory.

EXPERIMENTAL

Rectal temperatures of 12 yearling steers were recorded at two-week intervals for a complete year. The following year, 12 different yearling steers were used for the same purpose. The steers were approximately one year old at the beginning of each year of the study. During each year, four Angus, four Brahman, and four Hereford steers contributed the data. All animals were born and raised in the experiment station herd, and their dams

had been members of the same herd for several years. Therefore, these animals were considered acclimated to the area. The steer calves and their dams had been maintained continuously on Rose-lawn St. Augustinegrass pastures.

To secure rectal temperatures, the animals were confined in a covered chute approximately 15 to 30 minutes after walking in leisurely from nearby pastures. A Fahrenheit thermometer was inserted four inches into the rectum and held in the passage for at least three minutes. The actual air temperature was recorded at the beginning and end of each data collection period, by using the average of two thermometers located on opposite sides of a post. The midway point between the initial and final air temperature was used as the air temperature for that particular collection period. The collection periods usually lasted from 8:30 AM to 11:00 AM.

Individual data were compiled by breed, year of study, and period of the year and subjected to an analysis of variance as described by Snedecor (1956). Correlation and regression coefficients for body temperatures and environmental temperatures were calculated also.

RESULTS AND DISCUSSION

The overall average body temperature of all 24 steers used during the two year period was 103.9° F. The average rectal temperatures by breed were 104.2°, 103.4°, and 104.1° F for Angus, Brahman, and Herefords, respectively, with the Brahmans differing significantly ($P < .05$) from the Angus and the Hereford. Although these temperatures seem high, reports by Rieck and Lee (1948), by Bonsma (1948), and the comments by Findlay (1950) and Morrison (1957) indicate that calves have higher temperatures than mature cattle. These researchers have shown that heat tolerance is the lowest in calves and that it increases gradually up to about four years of age. Since the steers involved in the present study were between one and two years of age when contributing these data, their body temperatures might be expected to decline slightly as they reach maturity. However, data on such response was not obtained in this study.

As air temperatures increased, the rectal temperatures rose also. This same trend was reported by Brody (1956). Findlay (1950) stated that a rise of 5° in the body temperature of Angus

cows could be expected at an air temperature of 100° F, and Bianca (1963) found that rectal temperatures of calves rose almost linearly with the length of exposure to high temperatures in environmentally controlled chambers. The temperatures recorded in Table 1 show the rise occurring in body temperature of steers in this study as air temperatures increased. Air temperatures varied from 51 to 91° F at time of observations, and the values shown in this table were selected as representatives of the trend observed.

Statistical analysis indicated that air temperatures had a significant effect ($P < .01$) on body temperature in each of the breeds in this study.

Regression coefficients indicated that a rise of 10° F in air temperature caused a rise of 0.48° in the body temperature of Angus steers and an increase of 0.43° in the body temperature of Brahman and Hereford steers. The correlation coefficients between atmospheric temperature and body temperature were 0.61, 0.57, and 0.70 for the Angus, Brahman and Hereford breeds, respectively. The overall correlation coefficient for breeds combined was 0.62.

TABLE 1

Environmental temperatures and average body temperatures of yearling steers

Dates of Observation	Air Temperature*	Steers per Breed	Breed of Steer		
			Angus	Brahman	Hereford
Feb. 9	51	4	103.1	101.6	103.0
Jan. 12, Mar. 9	68	8	103.7	102.7	103.6
Nov. 30, Dec. 29	71	8	103.4	103.0	103.4
April 5, Nov. 2	75	8	103.6	103.0	103.4
Jan. 25, Feb. 8, April 6					
April 19, Oct. 19	79	20	104.2	103.6	104.0
Mar. 22, June 1, Nov. 16	82	12	104.1	104.0	104.0
May 4, Aug. 24, Sept. 7	87	12	104.2	103.5	104.1
May 31, June 28, Sept. 6	89	12	105.2	104.1	104.8
July 13, Aug. 23	91	8	105.0	104.0	104.8

*All temperatures expressed in degrees Fahrenheit.

SUMMARY

Rectal temperatures of four Angus, Brahman and Hereford yearling steers were taken at two week intervals throughout the year. A similar group provided information for a second year of observations. All steers originated in the area and were maintained on grass pasture.

The data indicate that the body temperature of yearling steers are somewhat higher in South Florida than in other parts of the country. Average temperature for the Angus, Brahman, and Hereford steers were 104.2, 103.4, and 104.1° F, respectively. Differences between breeds were significant. Variations in rectal temperatures within each breed were significantly correlated with environmental temperatures at recording time (0.62). The higher rectal temperatures occurred when environmental temperatures were the highest.

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